UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/734,715	12/12/2003	David K. Sanders	2705-275	2350

20575 7590 05/19/2006

MARGER JOHNSON & MCCOLLOM, P.C.
210 SW MORRISON STREET, SUITE 400
PORTLAND, OR 97204

EXAMINER	
HOFFBERG, ROBERT JOSEPH	
ART UNIT	PAPER NUMBER
2835	

DATE MAILED: 05/19/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	10/734,715	SANDERS ET AL.	
	Examiner	Art Unit	
	Robert J. Hoffberg	2835	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *09 May 2006*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-12 and 14-32* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☒ Claim(s) *10-12,14-20 and 25-28* is/are allowed.

6)☒ Claim(s) *1-3,21,24,29,30 and 32* is/are rejected.

7)☒ Claim(s) *4-9,22,23 and 31* is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *12 December 2003* is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

Detailed Action

Claim Objections

Claims 22-24 are objected to because of the following informalities in claim 21: "electrical contacts" should be "electrical conductors".

Claim 32 objected to because of the following informalities: Examiner is interpreting that that the first side should be the second side and the second side should be the third side because claim was not amended after claim 1 was amended. Appropriate correction is required.

Claim Rejections - 35 USC § 102

1. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

1. Claims 1, 3, 29-30 and 32 are rejected under 35 U.S.C. 102(e) as being anticipated by Minich et al. (US 6,814,590).

With respect to Claim 1, Minich et al. teaches a connector having a connecting face (Fig. 3, #44), comprising: conductors (Fig. 5, #52 left & right sides) connectable through the connecting face, the conductors including upper and lower surfaces (Fig 5, #52 near & far surfaces); and a housing (Fig. 3, #26) substantially enclosing the conductors and including first (Fig. 3, #44), second (Fig. 3, #46) and third sides (Fig. 3,

#48), the first side coinciding with the connecting face, the second and third sides including openings on opposite sides of the housing that together form a passageway extending completely through the connector from the first side to the second side for promoting air flow across the upper and lower surfaces of the conductors and through the housing.

With respect to Claim 3, Minich et al. further teaches including openings (see Fig. 3) on opposite sides of the housing for passing air through a first one of the openings, over the upper and lower surfaces of the conductors (Col. 4, lines 63-65) in parallel planar passageways (Fig. 3, on either side & in middle of #52), and out a second one of the openings.

With respect to Claim 29, Minich et al. further teaches including parallel airways (Fig. 3, on either side & in middle of #52) formed between the upper and lower surfaces of the conductors for channeling the air flow.

With respect to Claim 30, Minich et al. further teaches that the airways extend through (Fig. 3, #46 to #48) the housing.

With respect to Claim 32, Minich et al. further teaches that the conductors are arranged as vertically stacked blades (Fig.3 rotated 90°) spaced apart by horizontal channels (Fig. 3, on either side & in middle of #52) extending from the first side (examiner interpreting as second side) of the housing to the second side (examiner interpreting as third side) of the housing, the first and second openings allowing air (Col. 4, lines 63-65) to pass in through the opening on the first side of the housing, through

the horizontal channels over both a top and bottom surface of the vertically stacked conductor blades, and pass out the opening in the second side of the housing.

Claim Rejections - 35 USC § 103

2. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

3. Claim 2 is rejected under 35 U.S.C. 103(a) as being unpatentable over Minich et al. (US 6,814,590) in view of Yasufuku et al. (US 6,796,831).

With respect to Claim 2, Minich et al. teaches the connector of claim 1 above. Minich et al. fails to disclose a shroud. Yasufuku et al. teaches a shroud (Fig. 12, #54 and Fig. 3, #3) substantially enclosing the housing (Fig. 12, #11). It would have been obvious to one of ordinary skill in the art at the time of the invention was made to modify the method of Minich et al. with that of Yasufuku et al. for the purpose of maximizing the transfer of heat away from device by directing the flow of cooling air.

4. Claims 21 and 24 are rejected under 35 U.S.C. 103(a) as being unpatentable over Hamburgen (US 4,839,774) in view of Kramer et al. (US 6,574,108).

With respect to Claim 21, Hamburgen teaches a method for removing heat comprising: directing an air flow (Fig. 1, arrows near #15) from beneath a circuit board (Fig. 1, #10) through a first set (Fig. 1, #15) of contact holes located in the circuit board; and circulating the air (see Fig. 1) past electrical contacts (Fig. 1, #25) inserted in a second set (Fig. 1, #11) of electrically coupled contact holes located in the circuit board.

Hamburgen fails to teach a first set of electrically coupled contact holes. Kramer et al. teaches a first set of electrically coupled (Col. 3, line 28) contact holes (Fig. 3, #110) in a circuit board (Fig. 3, #100). It would have been obvious to one of ordinary skill in the art at the time of the invention was made to modify the method of Hamburgen with that of Kramer et al. for the purpose of maximizing the transfer of heat away from device mounted on the circuit board (Col. 2, lines 35-37).

With respect to claim 24, Hamburgen further teaches including circulating the air through parallel passageways (Fig. 3, on either side and between #26) formed between upper and lower surfaces (Fig. 3, top & bottom of #26 with #10 vertical) of conductors (Fig. 3, #26) located in a power device (Fig. 3, #20).

Allowable Subject Matter

5. Claims 4-9, 10-11, 14-16 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

The following is a statement of reasons for the indication of allowable subject matter: Claim 4 and all claims dependent thereof are allowable over the art of record because the prior art does not teach or suggest that a connector comprising of "a housing" and "an air flow control device configured to direct air through openings in a circuit board and into one of the housing openings". The aforementioned limitations in combination with all remaining limitations of the respective claims are believed to render said claims 4 and all claims dependent thereof patentable over art of record.

Claim 10 and all claims dependent thereof are allowable over the art of record because the prior art does not teach or suggest that a heat removal system comprising of "a power connector", "a device" attached over the connector for "directing air from underneath the circuit board up through a second set of contact holes, through the power connector and out an output vent". The aforementioned limitations in combination with all remaining limitations of the respective claims are believed to render said claims 10 and all claims dependent thereof patentable over art of record.

Claim 12 is allowable over the art of record because the prior art does not teach or suggest that a heat removal system comprising of "a power connector", "a device" attached over the connector including "an output vent", "intake vent" directing air from underneath the circuit board and into the device" and a "hinge". The aforementioned limitations in combination with all remaining limitations of the respective claims are believed to render said claim 12 patentable over art of record.

Claim 17 and all claims dependent thereof are allowable over the art of record because the prior art does not teach or suggest that an air flow control device comprising of "a unit", a power connector", "an air intake vent", "an air outtake vent", "conductor" arranged to direct the air through the power connector in channels exposing a majority of a surface area of the conductors". The aforementioned limitations in combination with all remaining limitations of the respective claims are believed to render said claims 17 and all claims dependent thereof patentable over art of record.

Claim 22 and all claims dependent thereof are allowable over the art of record because the prior art does not teach or suggest that a method comprising of "directing

an air flow" through "a first set of electrically coupled contact holes", "circulating air past electrical contacts" and "circulating air through parallel passageways formed between upper and lower surfaces of conductors located in a power device". The aforementioned limitations in combination with all remaining limitations of the respective claims are believed to render said claims 22 and all claims dependent thereof patentable over art of record.

Claim 25 and all claims dependent thereof are allowable over the art of record because the prior art does not teach or suggest that a connector comprising of "conductors", "a housing", "an air flow device substantially enclosing the housing" including promoting air flow through "a circuit board" and across parallel passageways exposing upper and lower surfaces of the conductors. The aforementioned limitations in combination with all remaining limitations of the respective claims are believed to render said claims 25 and all claims dependent thereof patentable over art of record.

Response to Arguments

6. Applicant's arguments filed 5/9/06 with respect to the rejection(s) of claim(s) 1-11 and 14-32 have been fully considered and are persuasive based upon the amended claims. Therefore, the rejection has been withdrawn. However, upon further consideration, a new ground(s) of rejection is made above.

7. Previous rejections to claims 5-6, 10-12, 14-16 and 20-24 are withdrawn based on the amended claims.

8. With respect to applicant's comments regarding air flow across an upper and lower surface of a conductor, it is noted that Minich et al. is being used to meet this limitation.

9. With respect to applicant's arguments regarding claim 32, it is noted that Minich et al. is being used to meet this limitation based on amending claim 1 from which this claim depends on.

10. With respect to applicant's arguments regarding claim 5-6, 9-11 and 14, the applicant has amended the claims or claims that these are depending therefrom.

11. With respect to applicant's arguments regarding claim 21 and 24, it is noted that Hamburgen in view of Kramer et al. are being used to meet this limitation.

Conclusion

12. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. Conner et al. (US 6,575,776) teaches a connector with opening for cooling the conductors. Law (US 6,835,070) teaches in Fig. 6 an air flow control device including an air intake vent on one side for promoting air flow perpendicular through a housing and an exhaust vent located on the other side for exhausting air parallel and offset to the intake air.

13. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Robert J. Hoffberg whose telephone number is (571) 272-2761. The examiner can normally be reached on 8:30 AM - 4:30 PM Mon - Fri.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Lynn D. Feild can be reached on (571) 272-2092. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

RJH

MICHAEL DATSKOVSKIY
PRIMARY EXAMINER
05/17/06